



KAPIL ENTERPRISES



CHEMICAL COMPOSITION FOR STUD BOLTS AS PER SA-193 & SA-320

Grade of alloy steel for Stud-Bolts to BS 1750 , ASTM A 193 and A 320								
SYMBOL	B7	B7M	B16	B8	B8M	B8T	L7 / L7M	L43
Type	Ferritic	Ferritic	Austenitic	Austenitic Unstabilized	Asutenitic	Austenitic Stabilized	Ferritic	Ferritic
Service conditions	High Temp.	High Temp.	High Temp.	High Low. Temp.	High Low. Temp.	High Low. Temp.	Low Temp.	Low Temp.
Material specification								
ASTM	A193 Grade B7	A193 Grade B7M	A193 Gr. B16	A193 Grade B8	A193 Grade B8M	A193 Grade B8T	A320 Grade L7	A320 GradeL43
Chemical composition	%	%	%	%	%	%	%	%
C.	0.37---0.49	0.37---0.49	0.36---0.47	0.08 max.	0.08 max.	0.08 max.	0.38---0.48	0.38---0.43
Mn.	0.65---1.10	0.65---1.10	0.45---0.70	2.00 max.	2.00 max.	2.00 max.	0.75---1.00	0.60---0.85
Si.	0.15---0.35	0.15---0.35	0.15---0.35	1.00 max.	1.00 max.	100 max.	0.15---0.35	0.15---0.35
P.	0.035 max.	0.035 max.	0.035 max.	0.045 max.	0.045 max.	0.045 max.	0.035 max.	0.040 max.
S.	0.04 max.	0.04 max.	0.04 max.	0.030 max.	0.030 max.	0.030 max.	0.040 max.	0.040 max.
Cr.	0.75---1.20	0.75---120	0.80---1.15	18.00---20.00	16.00---18.00	17.00---9.00	0.80---1.10	0.70---0.90
Ni.	--- ---	--- ---	--- ---	8.00---10.50	10.00---14.00	9.00---12.00	--- ---	1.65---2.00
Mo.	0.15---0.25	0.15---0.25	0.50---0.65	--- ---	2.00---3.00	--- ---	0.15-0.25	0.20---0.30
V.	--- ---	--- ---	0.25---0.35	--- ---	--- ---	--- ---	--- ---	--- ---
Ti.	--- ---	--- ---	--- ---	--- ---	--- ---	5xCMIN	--- ---	--- ---
Brinell Hardness	Not applicable	max. 20 RC	Not applicable	223 B.H.N. max.	223 B.H.N. max.	223 B.H.N. max.	Not applicable	Not applicable
Impact Value	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	20ft. lbf. at 1500F	20 ft. lbf. 1500F min
Physicals per ASTM A 193 & B.S. 1506-621 & B.S. 4882.								
U.T.S.	88kg/MM2min	70.3 min.	88kg/MM2min	52.75/MM2min	52.75kg/MM2	52.75kg	88kg/MM2	88kg/MM2
Elongation	16% min	18% min	18% min	30% min	30% min	30% min	16% min	16% min
Yield	70.39kg/MM2	56.26 min.	73.8kg/MM2	21.1kg/MM2mir	21.1kg/MM2	21.1kg/MM2	73.8kg/MM2	73.8kg/MM2
Reduction area	50% min	50% min	50% min	50% min	50% min	50% min	50% min	50% min
Heat treatment	Oil quenched & tempered	Oil quenched & tempered	Oil quenched & tempered	Carbide solution treated	Carbide solution treated	Carbide solution treated	Oil quenched & tempered	Oil quenched & tempered
Tempering temperature	11000F min 5930C	11500F min 6200C	12000F min 6500C	--- ---	--- ---	--- ---	11000F min 5930C min	11000F min 5930C min

www.roll-fast.com